Center Innovation Fund: GSFC CIF

Flow Boiling in Microgap Coolers - Validation via Suborbital Flight

Completed Technology Project (2017 - 2018)

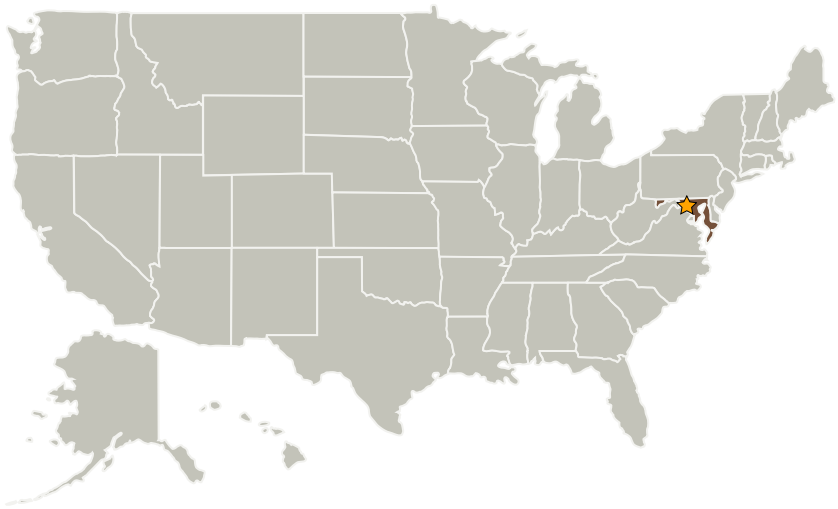
Project Introduction

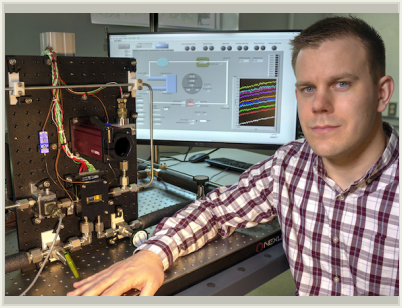
This modest research program completes the effort that had to be terminated early in FY17. The focus is on completing testing of the previously developed micro-channel coolers. Specific efforts in this restart include the initial development of a miniature two-phase flow loop to be flown aboard a suborbital flight awarded by the NASA Flight Opportunities Program. Flight validation of the ground-testing results will complete the technology maturation required for near-term mission infusion.

Anticipated Benefits

This technology, once demonstrated in a zero-gravity environment, will allow direct cooling of high heat flux chips or laser heads, thus allowing use of higher power devices in a compressed space.

Primary U.S. Work Locations and Key Partners





Flow Boiling in Microgap Coolers - Validation via Suborbital Flight

Table of Contents

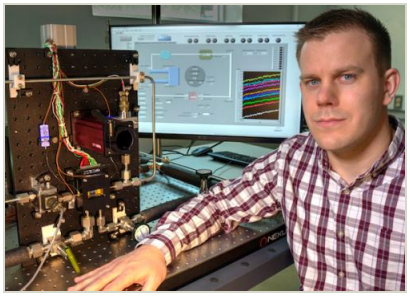
Flow Boiling in Microgap Coolers - Validation via Suborbital Flight

Completed Technology Project (2017 - 2018)

Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
University of Maryland-College Park(UMCP)	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	College Park, Maryland

Primary U.S. Work Locations
Maryland

Images



Project Image
Flow Boiling in Microgap Coolers - Validation via Suborbital Flight
(https://techport.nasa.gov/image/35805)

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Center / Facility:
Goddard Space Flight Center (GSFC)

Responsible Program:
Center Innovation Fund: GSFC CIF

Project Management

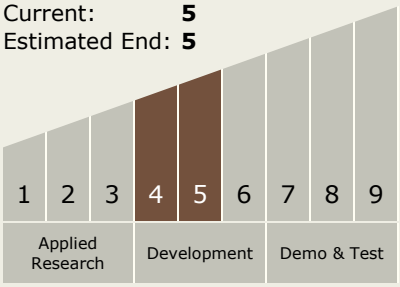
Program Director:
Michael R Lapointe

Program Manager:
Peter M Hughes

Principal Investigator:
Franklin L Robinson

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Flow Boiling in Microgap Coolers - Validation via Suborbital Flight

Completed Technology Project (2017 - 2018)

Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.1 Optical Communications
    - TX05.1.3 Lasers

Target Destination

Foundational Knowledge